

## WHAT IS CLAIMED IS:

1. A method for coating a shroud assembly for a gas turbine engine, said method comprising:

inserting the shroud segment into a clamping fixture such that at least two edges of the shroud are masked by the clamping fixture;

mounting the clamping fixture into a spraying fixture such that the shroud segment is oriented in approximately the same orientation as a sprayer; and

moving the sprayer and the spraying fixture relative to each other at predetermined rates to apply a layer of coating to the shroud segment.

2. A method in accordance with Claim 1 wherein moving the sprayer and the spraying fixture comprises vertically oscillating the sprayer and rotating the spraying fixture.

3. A method in accordance with Claim 1 wherein moving the sprayer and the spraying fixture at predetermined rates to apply a layer of coating comprises moving the sprayer and the spraying fixture at predetermined rates to apply a base coat layer.

4. A method in accordance with Claim 3 further comprising moving the sprayer and the spraying fixture at predetermined rates to apply a thermal barrier coating (TBC) layer after the base coat layer.

5. A method in accordance with Claim 4 wherein moving the sprayer and the spraying fixture at predetermined rates to apply a TBC layer comprises applying a predetermined number of TBC layers to a predetermined TBC thickness.

6. An apparatus for clamping and locating shroud segments during a spraying operation, said apparatus comprising:

a base;

a pair of elongated arms, each comprising a first end and an opposite second end, each of said first ends coupled to said base;

a clamping element coupled to each said arm second end, said clamping element for securing a shroud segment to said base, such that at least one edge of the shroud segment is masked by said clamping element; and

a locating member coupled to said base between said pair of arms for positioning the shroud segment with respect to said base, said locating member configured to engage a shroud segment surface for positioning the shroud segment.

7. An apparatus in accordance with Claim 6 wherein at least one of said arms is deflectable transversely relative to a length of said arm.

8. An apparatus in accordance with Claim 6 wherein at least one of said arms is fabricated from spring steel.

9. An apparatus in accordance with Claim 6 wherein at least one of said arms is deflectable between a first position wherein the shroud segment is held by said clamping element and a second position wherein the shroud segment is released from said clamping element.

10. An apparatus in accordance with Claim 9 wherein said at least one arm is biased toward said first position.

11. An apparatus in accordance with Claim 6 wherein said locating member comprises a yoke defining a slotted opening, said opening sized to receive a locating rib on extending from the shroud segment.

12. An apparatus in accordance with Claim 11 further comprising a cam positioned within said yoke slotted opening, said cam for moving said deflectable arm between a first position wherein the shroud segment is held by said clamping element and a second position wherein the shroud segment is released from said clamping element.

13. An apparatus in accordance with Claim 12 further comprising an adjuster coupled to said cam for controlling operation of said cam.

14. An apparatus for clamping gas turbine engine shroud segments, said apparatus comprising:

a base;

a pair of arms comprising opposite first and second ends, each of said first ends coupled to said base; and

a clamping element coupled to each said arm second end, said clamping element configured to clamp the shroud segments to said base such that at least one edge of each shroud segment is masked.

15. An apparatus in accordance with Claim 14 wherein at least one of said arms is deflectable transversely relative to a length of said arm.

16. An apparatus in accordance with Claim 14 wherein at least one of said arms is fabricated from spring steel.

17. An apparatus in accordance with Claim 14 wherein at least one of said arms is deflectable between a first position wherein the shroud segment is held by said clamping element and a second position wherein the shroud segment is released from said clamping element.

18. An apparatus in accordance with Claim 17 wherein said at least one arm is biased toward said first position.